REMARKS

Upon careful and complete consideration of the final Office Action dated October 2, 2002, applicants have amended the claims which, when considered in conjunction with the comments herein below, are deemed to place the present application into condition for allowance. Favorable reconsideration of this application, as amended, is respectfully solicited.

In the final Office Action, the Examiner has maintained the rejection of all the claims for the same reasons set forth in rejecting the claims in the last office action (i.e. Paper No. 7). It is noted that the amendments requested to be entered above include the cancellation of all product claims, i.e. claims 23-30, 35-39 and 46-56. Accordingly, the initial rejection of these claims has become moot.

Consequently, the only issue remaining with regard to the subject claims is the rejection of claims 1-22 and 40-45 under 35 U.S.C. §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly being obvious over U.S. Patent No. 5,139,795 to DuRoss (hereinafter referred to as "DuRoss"). Specifically, the Examiner has stated that "DuRoss teaches crystalline xylitol and products containing, wherein the crystalline xylitol is prepared by contacting a xylitol melt with finely grounded xylitol seed crystals (see entire patent, especially Example 1). The claims appear to differ as to the specific drying step. It is not seen how the claimed invention differs from that of the prior art. The final product of DuRoss is a solid and may be ground down (see Examples 2-5). A drying step would be inherent and/or obvious to that of DuRoss as a solid crystallized xylitol is obtained."

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Applicants respectfully disagree with the allegations and conclusions made by the Examiner. The process of the present invention comprises a suspension crystallization wherein a solution of xylitol is sprayed as minute droplets into warm air. The air also contains suspended fine solid microcrystalline xylitol particles. The solvent (i.e. water) of the solution immediately starts to evaporate and some of the minute droplets start to crystallize into minute solid particles, microcrystals. Other droplets come into contact with the surface of the solid microcrystalline xylitol products suspended in the warm air.

The temperature of the solution and the crystallizing xylitol is at all times during the contacting process maintained at a temperature well below the melting point of xylitol. This is important because the crystallizing particles should on no account be allowed to melt. Further, the concentration of the xylitol solution should be maintained at about 30 to 80% by weight in order to provide a suitable supersaturation at the crystallization. The xylitol concentration is preferably about 50-75% by weight.

The suspended crystallization of the present invention takes place by a simultaneous crystallization and removal of the solvent component in a gas suspended phase. The crystallization is very rapid compared to other xylitol crystallization processes. The rapidity is due partly to the dry feed xylitol particles as these provide an abundance of seed crystals which induce an immediate and rapid crystallization. The concentration of xylitol in the feed solution also plays an important role in the process. The concentration in the aqueous feed solution is sufficiently low to allow the xylitol molecules to move fast and therefore to rapidly

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find their proper positions in the crystal being formed. The simultaneous crystallization and evaporation balances the crystallization and keeps the supersaturation on the particle surfaces at a level which promotes rapid crystallization.

When the suspended liquid or crystallizing xylitol droplets contact the solid xylitol, the droplets adhere to the surface of the solid xylitol particles and start to crystallize there. At the same time, the particles and droplets are in a constant motion and repeatedly crock into each other. Sometimes two or more particles or crystallizing droplets may adhere together in a totally random manner forming larger entities. These entities may yet again become adhered to other randomly adhered particles until a porous agglomerated structure of minute crystallized and crystallizing particles is formed.

It is evident that when such discrete minute crystals adhere together because their surface is sticky (wetted with a layer of liquid xylitol) it is only a local surface contact which is provided between the particles. The remaining surfaces and the inner portions between the minute crystals remain intact. The separate minute crystals (the microcrystals) are still clearly discernible at least with a microscope. Between discrete microcrystals there is more or less empty space. Thus, a porous particulate microcrystalline structure is created.

The suspension crystallization in the process according to the present invention is followed by a conditioning and drying step which is performed in such a manner as to allow the crystallization of the xylitol in the discrete adhered particles to proceed fully so that the resulting cluster of crystalline material is composed

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essentially of minute separate crystalline particles agglomerated together. The agglomerate is then broken up to form a particulate crystalline product wherein each particle is composed of a multitude of adhered minute microcrystals.

The crystallization process of DuRoss is a melt crystallization wherein a xylitol solution is cooked at a high temperature to provide a melt containing less than 2% moisture. The hot mixture is continuously stirred with an agitator. Just before crystallization, seed crystals of finely ground xylitol are added to the vortex of the viscous mixture and the stirring is continued at high speed. Crystallization takes place in the viscous melt. The melt mass is poured on a tray where it finally crystallizes into a white solid.

In contrast to the above, the present process comprises a suspension crystallization, wherein the xylitol crystallizes well below its melting temperature from an aqueous solution. In addition, as now amended, it is clear that the concentration of the feed solution is 30 to 80% by weight. DuRoss teaches a concentration of 98-99% by weight. These two clear distinctions of the process of the present invention from that disclosed by DuRoss clearly overcome any anticipatory or obviousness-type rejections based on the teachings of DuRoss.

Based on the above arguments distinguishing the different crystallization processes of the present invention and that of DuRoss, it is respectfully requested that the rejection of the process claims based on DuRoss be withdrawn.

It is further noted that applicants enclose a copy of **"Versi n With Markings to Show Changes Made"** indicative of the amendments being implemented herewith.

Finally, it is further submitted that all the claims in the application contain patentable subject matter and a Notice of Allowance is respectfully solicited.

Respectfully submitted,

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Enc. (Version with Markings to Show Changes Made)

<u>VERSION WITH MARKINGS TO SHOW CHANGES MADE</u>

1. (Amended) A process for the crystallization of xylitol, comprising

- contacting a liquid containing dissolved xylitol <u>at a concentration of 30-80 % by weight</u> with gas suspended fine solid particles containing microcrystalline xylitol;

- causing substantial removal of the solvent component of said liquid and allowing the resulting xylitol material to form an essentially solid composition of matter comprising a multitude of microcrystals of xylitol; and

- causing said xylitol composition to be conditioned during a further drying step to provide a product consisting essentially throughout its entire structure of a multitude of microcrystals of xylitol agglomerated together in a random matter.